CLAIMS

What is claimed is:

1. A resonant electrical generation system, comprising:

a) a resonator configured to provide resonating movement in a resonating element;

b) an energy source, operatively coupled to the resonator, to support resonating movement of the resonating element; and

c) an electrical generator, operatively coupled to and driven by the resonator, configured to generate electrical power from the resonating movement.

2. A system in accordance with claim 1, wherein the resonator includes:

a) a base;

b) a spring element, coupled at one end to the base; and

c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base.

3. A system in accordance with claim 1, wherein the energy source includes:

a) an elongated combustion tube having a mixing chamber and an exhaust port;

b) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and

c) an igniter, in the combustion tube, configured to ignite the fuel.

4. A system in accordance with claim 3, further comprising:

a) a cylinder, coupled to the exhaust port of the combustion tube;

b) a piston, reciprocally disposed in the cylinder; and

c) a push rod, coupled to and between the piston and the resonator, configured to transmit movement of the piston to the resonator.

5. A system in accordance with claim 3, wherein the combustion tube is configured to produce pulsatile combustion gasses out of the exhaust port corresponding to a resonant frequency of the resonator.

6. A system in accordance with claim 3, wherein the combustion tube has a diameter less than approximately 1100 microns.

7. A system in accordance with claim 1, wherein the electrical generator includes:

a magnet and a coil, one of which is attached to the resonator and configured for resonating movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and coil being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.

8. A system in accordance with claim 1, wherein the resonator includes:

a) a base;

b) a spring element, coupled at one end to the base; and

c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base; and

wherein the energy source includes:

d) an elongated combustion tube having a mixing chamber and an exhaust port;

e) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and

f) an igniter, disposed in the combustion tube, configured to ignite the fuel.

9. A system in accordance with claim 1, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.

10. A resonant electrical generation system, comprising:

a) a resonating system configured to provide resonating movement in a resonating element;

b) a combustion tube, operatively coupled to the resonating system, configured to produce pulsatile combustion gases to support resonating movement of the resonating system; and

c) a magnet and a coil, one of which is attached to the resonating system and configured for resonant movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and coil being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.

11. An apparatus in accordance with claim 10, wherein the resonating system includes:

a) a base;

b) a spring element, coupled at one end to the base; and

c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base.

12. An apparatus in accordance with claim 10, further comprising:

a) a cylinder, coupled to the exhaust port of the combustion tube;

b) a piston, reciprocally disposed in the cylinder; and

c) a push rod, coupled to and between the piston and the resonating system, configured to transmit movement of the piston to the resonating system.

13. An apparatus in accordance with claim 10, wherein the combustion tube is configured to produce pulsatile combustion gasses out of the exhaust port corresponding to a resonant frequency of the resonating system.

14. An apparatus in accordance with claim 10, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.

15. An apparatus in accordance with claim 10, wherein the combustion tube has a diameter less than approximately 1100 microns.

16. An electrical generation system, comprising:

a) a resonating structure configured for resonating movement, including:

1) a base;

2) a spring element, coupled at one end to the base; and

3) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base;

b) an energy source, operatively coupled to the resonating structure, to support resonating movement, including:

1) an elongated combustion tube having a mixing chamber and an exhaust port;

2) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and

3) an igniter, disposed in the combustion tube, configured to ignite the fuel; and

c) an electrical generator, operatively coupled to and driven by the resonating structure, configured to generate electricity due to the resonating movement.

17. A system in accordance with claim 16, wherein the electrical generator includes:

a magnet and a coil, one of which is attached to the resonating structure and configured for resonant movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and wire being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.

18. A system in accordance with claim 16, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.

19. A system in accordance with claim 16, wherein the combustion tube has a diameter less than approximately 1100 microns.